



Short Communication

Expectations and experiences of institutional foods among Finnish male conscripts

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ABSTRACT

We examined the views of army catering foods in 19–20-year-old Finnish male conscripts. Four to six weeks before starting their service, the conscripts ($n = 407$) rated the pleasantness of 36 foods in general, and their expectation of pleasantness “when these foods are served in the army”. After 2 months of service, they rated the experienced pleasantness of the same products and their perceptions of the eating environment (dining hall). Demographic and psychosocial data were also collected. The “before” ratings showed no negative expectations of the foods served in the army, compared to expectations of those foods in general. However, 21 out of 36 foods served in the garrison failed meeting the hedonic expectations, and only six exceeded them. When grouped into categories, *Cereal snacks* and *Sweet items* were the best, and *Soups* and *Salads and Fruit* the least liked food categories. *Sweet items* was the only food category rated higher after 2 months of service. Psychosocial instruments did not predict ratings, suggesting that hedonic responses to the dishes represent a shared experience of this male cohort. Neither did the rated comfort of the dining hall relate to the experienced pleasantness of foods eaten in the dining hall. We suggest that the Finnish catering systems prior to the army service (day care, school lunch) raise the young men to accept institutional foods, but the perceived quality of army catering does not quite live up to the expectations. Positive responses to the sweet items in the army can reflect increased need for energy and enjoyment from the food.

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1. Introduction

Institutional food service is often associated with poor quality. Cardello, Bell, and Kramer (1996) reviewed the literature and concluded that, whether school, hospital, army or any other institution, the perceptions of everyday catering meals tend to be low. Their empirical research showed that foods served to the soldiers in the US Army were expected to be worse than foods without the specification “institutional”. However, they also found that, after exposures to institutional foods during the service, hedonic ratings significantly exceeded the expectations (Cardello et al., 1996). From the perspective of food provider, the challenge is the persistence of negative expectations as they do not easily go away even when perceptions prove otherwise (Tuorila, Cardello, & Leshner, 1994).

Practically all published results from military environments come from the US Army laboratories where the facilities,

personnel, and long tradition support such research (Meiselman & Schutz, 2003; Hirsch, Kramer, & Meiselman, 2005). However, the results may not generalize globally, as servicemen, the length of service, feeding systems and foods and the surrounding societies vary. Therefore it is important to expand the research to other societies and cultures to see if the perceptions of institutional, and specifically army, foods are alike or if they differ.

In Finland, the military service is mandatory for men, and 80% of each age group joins the service for at least six months. Most of them start the service at the age of 19 or 20 years. Daily meals at the Finnish military are catered in the dining hall of each garrison. The meals are planned to meet the nutrient requirements of this target group. A major project related to health and nutrition of Finnish conscripts was conducted in years 2006–10 (see, e.g., Bingham et al., 2011; Hankonen, Absetz, Kinnunen, Haukkala, & Jallinoja, 2013; Jallinoja et al., 2011). In this context, we repeated the design of the study 4 by Cardello et al. (1996) to examine whether the negative stereotypes of the military catering observed in the US exist among Finnish conscripts, and to examine the performance of meals relative to expectations. Thus, the present

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survey compared hedonic ratings of a range of foods, hedonic expectations of these foods when served in the army, and the rated hedonic experience of the same foods after exposures to them in the army. As the context of eating has been identified as a significant factor in food acceptance (Hirsch et al., 2005), the perceived comfort of the dining hall was considered as a possible predictor of pleasantness after exposure and was therefore included in the study design. A few psychosocial instruments were used to further explore the possible origin of hedonic ratings.

2. Materials and methods

2.1. Data collection

Conscripts starting their service in January or July 2007 in two garrisons located in Southern and Northern Finland completed an extensive questionnaire of their health and nutrition practices and attitudes 4–6 weeks before they entered the service. The cover letter and the later, related questionnaires clearly stated that the participation in the study was voluntary. Demographics and subscales of Health and Taste Attitude scales (Roininen, Lähteenmäki, & Tuorila, 1999) and Food Neophobia Scale (Pliner & Hobden, 1992) were included in the questionnaire.

The expected pleasantness of 36 dishes was rated on a 7-point verbally anchored scale (1 = very unpleasant, 7 = very pleasant; an option “do not know the dish” was also possible). Based on information from the catering centers, these dishes were to be served in the garrisons during the first 2 months of service. No other criterion was set for the choice of the 36 dishes. Cardello et al. (1996) used a 9-point liking scale, while we chose to use the 7-point pleasantness scale. The reason for the use of seven categories was that they were used in most other parts of the questionnaire; and anchors referring to pleasantness roughly correspond to the degree of liking ratings; regardless of the verbal anchors and lengths, hedonic scales appear to differentiate between stimuli fairly similarly (Tuorila et al., 2008). Thus, comparisons between the two studies would be possible.

The dishes were first rated without any specification of context (“How pleasant or unpleasant do you think the following foods are?”). After a set of questions unrelated to their preferences, the respondents rated the same dishes when served in the army (“The following foods will, among other foods, be served during your service in the army. How pleasant or unpleasant do you expect they will be?”).

At the arrival to the garrison, male conscripts of the selected companies were invited to participate in further stages of the study. Among other measurements, their height (precision 0.5 cm) and weight (precision 0.1 kg) were measured. After 2 months of service, 407 male respondents who were either 19 or 20 years old and had completed the questionnaire described above rated the pleasantness of 36 dishes based on their experience of them in the army. In this context, they also rated statements on the comfort of the dining hall where the meals were served (nine statements related to the atmosphere, company and other comfort issues, from 1 = fully disagree to 5 = fully agree). As to the background of respondents, 85.5% lived with their parents prior to conscription, 51.8% had completed the high school, 25.1% were smokers, and 66.1% had a BMI < 25.

2.2. Data analysis

For food neophobia and HTAS subscales, the composite scales were formed as described by Pliner and Hobden (1992) and by Roininen et al. (1999), respectively. Cronbach's alpha for food

neophobia was 0.86, and for HTAS scales General health interest (GHI), Craving and Reward 0.89, 0.74, and 0.69, respectively. Nine statements related to the comfort of the dining hall were positive to the target, thus the mean of ratings was used as the Comfort instrument ($\alpha = 0.79$). This scale was used as dichotomous, with a cut-off point at median (1–3.54 = low perceived comfort, 3.55–5 high perceived comfort).

The three pleasantness ratings (in general; expectation when served in the army; experience in the army) were first compared using one-way repeated measures analysis of variance for each food separately. The separate analyses were necessary, because in the sets of three ratings, the number of responses “do not recognize” varied individually, and would have led to major losses of respondents, if analyzed over the products. The mean number of missing values in the comparisons of three conditions was 60, and it ranged from 4 (pea soup) to 296 (moussaka).

Thirty-six separate foods were divided into seven categories representing cereal-based snacks, sweet items (mainly desserts), casseroles, dishes served with starches, porridge, soups, and salads and fruit (for items in each category, see Fig. 2). The categories allowed the analysis of pleasantness ratings such that the pleasantness of each category could be computed for each individual even when only part of the foods had been rated by an individual. Explorative factor analyses based on pleasantness ratings did not lead to any sensible categories, and consequently the categories were formed based on the type of product and similarity of use context. Cronbach's alphas for each category and each condition (civil experience, army expected, army experience) were 0.51, 0.59, 0.67 (cereal snacks, 3 items); 0.77, 0.83, 0.79 (sweet items, 6); 0.73, 0.80, 0.81 (casseroles, 7 items); 0.73, 0.76, 0.81 (dishes served with starches, 6 items); 0.90, 0.90, 0.95 (porridge, 2 items); 0.82, 0.83, 0.84 (soups, 7 items); and 0.82, 0.84, 0.81 (salads and fruits, 5 items).

Three-way analysis of variance was used to analyze the effects of the category (7), pleasantness rating condition (3), and perceived comfort of dining hall (2). Main effects and two-way interactions were examined. The two first sets were within-subject and the third between-subjects variables. Similar models were used to examine whether food neophobia, HTAS subscales (General health interest, Craving for sweet and Reward), truncated into dichotomous variables at medians, affected ratings. Furthermore, BMI (max 25 vs. above) was used as a between-subjects dichotomous variable in the analysis of variance.

3. Results

The conscripts showed no negative expectations of the foods served in the army, compared to the expectations of the same products in general (Fig. 1). Ratings of one food only (soup with turkey and root vegetables) were significantly higher in the “in general” than “when served in the army” condition. A majority of the foods experienced in the garrisons (21 out of 36) were rated the lowest of the three pleasantness ratings and thus failed in meeting the expectations. Six foods were rated significantly the highest after exposure in the garrison: pancake with strawberry jam, quark with fruits, pea soup, chocolate mousse, red currant jelly, and grated rutabaga. Note that four of these foods were desserts. The expectations and experience did not differ in the case of eight foods.

The ratings of food categories based on the type of product and similarity of use context are presented in the order of decreasing popularity (Fig. 2). Three-way analysis of variance showed that the pleasantness of food categories was significantly different (main effect of food category, $F[6,2370] = 95.5$, $p < 0.001$).

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